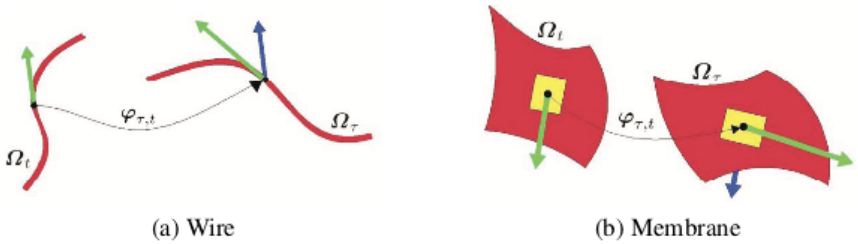
**Professor Raffaele Barretta**




(a) Wire (b) Membrane

Figure 2: Lower dimensionality: wire and membrane in motion.

From: Giovanni Romano and Raffaele Barretta, "Geometric issues in non-linear computational mechanics", Publisher and date not given in the pdf file. The most recent reference is dated 2011.

See:
https://loop.frontiersin.org/people/504168/overview
https://loop.frontiersin.org/people/504168/bio
https://www.researchgate.net/profile/Raffaele_Barretta
https://scholar.google.com/citations?user=HPSsDHkAAAAJ&hl=en

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**Biography:**
Raffaele Barretta was born in Naples, Italy March 20, 1980. Master Degree (5 years) in Civil Engineering with magna laude at University of Naples Federico II, 2003 - Title of thesis: Polar Models of Beams and Shells in Large Deformations. Ph.D. in Structural Mechanics at University of Naples Federico II, 2007 - Title of thesis: Mixed Variational Methods in Elasticity. Associate Professor of Solid and Structural Mechanics at the Department of Structures for Engineering and Architecture of the University of Naples Federico II since 2015. Field of expertise: Continuum Mechanics; Beams, Plates, Shells; Nano-Materials; Non-Local Elasticity; Functionally Graded Materials; MEMS/NEMS.

**Selected Publications:**
G. Romano, R. Barretta, and C. Sellitto, "On the evaluation of the elastoplastic tangent stiffness", pp. 1118–1121 in VIII International Conference on Computational Plasticity (Barcelona), 2005.
G. Romano, M. Diaco, and R. Barretta, "Continuum mechanics: A Differential Geometric Approach", Research report, Dept. of Structural Engineering, Univ. of Naples Federico II, 2005.
G. Romano, M. Diaco, and R. Barretta, "A geometric approach to the algorithmic tangent stiffness", pp. 121–129 in III European Conference on Computational Mechanics (Lisbon), 2006.
Giovanni Romano, Carmen Sellitto and Raffaele Barretta, "Nonlinear shell theory: A duality approach", Journal of Mechanics of Materials and Structures, Vol. 2, No. 7, 2007
Romano, G., Barretta, A. and Barretta, R. [2012] "On torsion and shear of Saint-Venant beams," European Journal of Mechanics A/Solids 35, 47–60.
Giovanni Romano and Raffaele Barretta, "Geometric issues in non-linear computational mechanics", Publisher and date not given in the pdf file. The most recent reference is dated 2011.
Barretta, R. On the relative position of twist and shear centres in the orthotropic and fiberwise homogeneous Saint–Venant beam theory. Int. J. Solids Struct. 2012, 49, 3038–3046
Barretta, R. On Cesàro-Volterra Method in Orthotropic Saint-Venant Beam. J. Elast. 2013, 112, 233–253.

Barretta, R.: Analogies between Kirchhoff plates and Saint-Venant beams under torsion. Acta Mech. 224(12), 2955–2964 (2013).
Barretta R, Marotti de Sciarra F., A nonlocal model for carbon nanotubes under axial loads. Adv Mater Sci Eng vol. 2013, 6 p, Article ID 360935.
F. M. D. Sciarra and R. Barretta, “A gradient model for timoshenko nanobeams,” Phys. E: Low-Dimensional Sys. Nanostruct., vol. 62, no. 8, pp. 1–9, 2014.
Marotti de Sciarra, F.; Barretta, R. A new nonlocal bending model for Euler-Bernoulli nanobeams. Mech. Res. Commun. 2014, 62, 25–30.
Barretta, R. and Luciano, R. (2014), "Exact solutions of isotropic viscoelastic functionally graded Kirchhoff plates", Compos. Struct., 118, 448-454.
R. Barretta, F. M. D. Sciarra, and M. Diaco, “Small-scale effects in nanorods,” Acta Mech., vol. 225, no. 7, pp. 1945–1953, 2014.
Barretta, R.: Analogies between Kirchhoff plates and Saint-Venant beams under flexure. Acta Mech. 225(7), 2075-2083 (2014).
Barretta R, Feo L, Luciano R, de Sciarra FM (2015) Variational formulations for functionally graded nonlocal Bernoulli–Euler nanobeams. Compos Struct 129:80–89
Barretta, R., de Sciarra, F.M.: Analogies between nonlocal and local Bernoulli–Euler nanobeams. Arch. Appl. Mech. 85, 89–99 (2015)
Barretta, R.; Feo, L.; Luciano, R. Some closed-form solutions of functionally graded beams undergoing nonuniform torsion. Compos. Struct. 2015, 123, 132–136.
R. Barretta, L. Feo, R. Luciano, Torsion of functionally graded nonlocal viscoelastic circular nanobeams, Compos B Eng, 72 (2015), pp. 217-222
Apuzzo, A., Barretta, R. and Luciano, R. (2015), "Some analytical solutions of functionally graded Kirchhoff plates", Compos. Part B: Eng., 68, 266-269.
Patti, A., Barretta, R., de Sciarra, F.M., Mensitieri, G., Menna, C. and Russo, P. (2015), "Flexural properties of multi-wall carbon nanotube/polypropylene composites: Experimental investigation and nonlocal modeling", Compos. Struct., 131, 282-289.
Barretta, R., Luciano, R.: Analogies between Kirchhoff plates and functionally graded Saint-Venant beams under torsion. Contin. Mech. Thermodyn. 27(3), 499–505 (2015)
R. Barretta, R. Luciano, Marotti de Sciarra F., A fully gradient model for Euler-Bernoulli nanobeams. Math Prob Eng vol. 2015, 8 p, Article ID 495095.
Abbondanza, D., Battista, D., Morabito, F., Pallante, C., Barretta, R., Luciano, R., Marotti de Sciarra, F., Ruta, G., "Linear dynamic response of nanobeams accounting for higher gradient effects", Journal of Applied and Computational Mechanics, 2(2), pp. 54-64, 2016.
Barretta R, Feo L, Luciano R, Marotti de Sciarra F. An Eringen-like model for Timoshenko nanobeams. Composite Structures. 2016;139:104-110.
Barretta R, Feo L, Luciano R, Marotti de Sciarra F, Penna R. Functionally graded Timoshenko nanobeams: A novel nonlocal gradient formulation. Composites Part B: Engineering. .100:208-219; 2016
Barretta R, Feo L, Luciano R, Marotti de Sciarra F. Application of an enhanced version of the Eringen differential model to nanotechnology. Composites Part B: Engineering. 2016; 96: 274-280
Canadija, M., Barretta, R. and De Sciarra, F. M. [2016] “ On functionally graded Timoshenko nonisothermal nanobeams,” Composite Structures 135, 286–296.
R. Barretta, M. Canadija and F. M. de Sciarra, A higher-order Eringen model for Bernoulli-Euler nanobeams, Arch. Appl. Mech. 86 (2016) 483–495.
Romano G, Barretta R, Diaco M. Micromorphic continua: non-redundant formulations. Continuum Mechanics and Thermodynamics. 2016; 28(6):1659-1670.
Barretta, R.; Brcˇic , M.; Cˇanađija, M. ; Luciano, R.; Marottide Sciarra, F. Application of gradient elasticity to armchair carbon nanotubes: Size effects and constitutive parameters assessment. Eur. J. Mech. A Solids 2017, 65, 1–13.
Romano G, Barretta R (2017) Nonlocal elasticity in nanobeams: the stress-driven integral model. Int J Eng Sci 115:14–27
Barretta, R., Diaco, M., Feo, L., Luciano, R., de Sciarra, F.M., Penna, R.: Stress-driven integral elastic theory for torsion of nano-beams. Mech. Res. Commun. 87, 35–41 (2017)

Andrea Apuzzo, Raffaele Barretta, Raimondo Luciano, Francesco Marotti de Sciarra and Rosa Penna, “Free vibrations of Bernoulli-Euler nano-beams by the stress-driven nonlocal integral model”, Composites Part B: Engineering, Vol. 123, pp 105-111, August 2017
Romano, G.; Barretta, R.; Diaco, M.; de Sciarra, F.M. Constitutive boundary conditions and paradoxes in nonlocal elastic nanobeams. Int. J. Mech. Sci. 2017, 121, 151–156.
Barretta, R., Feo, L., Luciano, R., Marotti de Sciarra, F., Penna, R.: Nano-beams under torsion: a stress-driven nonlocal approach. PSU Res. Rev. 1, 164–169 (2017)
Romano G, Barretta R (2017) Stress-driven versus strain-driven nonlocal integral model for elastic nano-beams. Compos Part B 114:184–188
Apuzzo A, Barretta R, Canadija M, Feo L, Luciano R, Marotti de Sciarra F. A closed-form model for torsion of nanobeams with an enhanced nonlocal formulation. Composites Part B: Engineering. 2017;108:315-324.
Romano G, Barretta R, Diaco M (2017) On nonlocal integral models for elastic nano-beams. Int J Mech Sci 131–132:490–499
R. Barretta, S.A. Faghidian, R. Luciano, Longitudinal vibrations of nano-rods by stress-driven integral elasticity, Mechanics of Advanced Materials and Structures (2018), pp. 1-9
R. Barretta, F. Fabbrocino, R. Luciano, F.M. de Sciarra, Closed-form solutions in stress-driven two-phase integral elasticity for bending of functionally graded nano-beams, Physica E: Low-dimensional Systems and Nanostructures, 97 (2018), pp. 13-30
R. Barretta, S. Ali Faghidian, R. Luciano, C.M. Medaglia and R. Penna, “Free vibrations of FG elastic Timoshenko nano-beams by strain gradient and stress-driven nonlocal models”, Composites Part B: Engineering, Vol. 154, pp 20-32, 1 December 2018
R. Barretta, M. Canadija, R. Luciano, F.M. de Sciarra, Stress-driven modeling of nonlocal thermoelastic behavior of nanobeams, International Journal of Engineering Science, 126 (2018), pp. 53-67
R. Barretta, S.A. Faghidian, R. Luciano, C. Medaglia, R. Penna, Stress-driven two-phase integral elasticity for torsion of nano-beams, Composites Part B: Engineering, 145 (2018), pp. 62-69
A. Apuzzo, R. Barretta, S.A. Faghidian, R. Luciano, F. Moratti de Sciarra, Free vibrations of elastic beams by modified nonlocal strain gradient theory, Int J Eng Sci, 133 (2018), pp. 99-108
R. Barretta, F.M. de Sciarra, Constitutive boundary conditions for nonlocal strain gradient elastic nano-beams, International Journal of Engineering Science, 130 (2018), pp. 187-198
R. Barretta, M. Canadija, L. Feo, F.M. De Sciarra, R. Penna, Exact solutions of inflected functionally graded nano-beams in integral elasticity, Compos B Eng, 142 (2018), pp. 273-286
Barretta, R., Luciano, R., Marotti de Sciarra, F., Ruta, G.: Stress-driven nonlocal integral model for Timoshenko elastic nano-beams. Eur. J. Mech. A/Solids 72, 275–286 (2018).
Romano, G., Luciano, R., Barretta, R., Diaco, M.: Nonlocal integral elasticity in nanostructures, mixtures, boundary effects and limit behaviours. Contin. Mech. Thermodyn. 30, 641–655 (2018)
Barretta, R., Faghidian, S.A., and Luciano, R. (2018), “Longitudinal vibrations of nano-rods by stress-driven integral elasticity”, Mech. Adv. Mater. Struct., 26(15), 1307-1315.
Raffaele Barretta, Francesco Marotti de Sciarra and Marzia Sara Vaccaro, “On nonlocal mechanics of curved elastic beams”, International Journal of Engineering Science, Vol. 144, Article 103140, November 2019
Barretta, R., de Sciarra, F.M.: Variational nonlocal gradient elasticity for nano-beams. Int. J. Eng. Sci. 143, 73–91 (2019).
Raffaele Barretta, Andrea Caporale, S. Ali Faghidian, Raimondo Luciano, Francesco Marotti de Sciarra and Carlo Maria Medaglia, “A stress-driven local-nonlocal mixture model for Timoshenko nano-beams”, Composites Part B: Engineering, Vol. 164, pp 590-598, 1 May 2019
A. Apuzzo, R. Barretta, S.A. Faghidian, R. Luciano and F. Marotti de Sciarra, “Nonlocal strain gradient exact solutions for functionally graded inflected nano-beams”, Composites Part B: Engineering, Vol. 164, pp 667-674, 1 May 2019
Raffaele Barretta, S. Ali Faghidian, Francesco Marotti de Sciarra and Francesco Paolo Pinnola, “Timoshenko nonlocal strain gradient nanobeams: variational consistency, exact solutions and carbon nanotube Young moduli”, Mechanics of Advanced Materials and Structures, 2019 or 2020, DOI: 10.1080/15376494.2019.1683660
F.P. Pinnola, S. Ali Faghidian, R. Barretta and F. Marotti de Sciarra, “Variationally consistent dynamics of nonlocal gradient elastic beams”, International Journal of Engineering Science, Vol. 149, Article 103220, April 2020

Barretta, R., Faghidian, S.A., de Sciarra, F.M., et al.: On torsion of nonlocal Lam strain gradient FG elastic beams. Comp. Struct. 233, 111550 (2020)
Barretta, R., Faghidian, S. A., Marotti de Sciarra, F. and Vaccaro, M. S. [2020] " Nonlocal strain gradient torsion of elastic beams: Variational formulation and constitutive boundary conditions," Archive of Applied Mechanics 90, 691–706.
Raffaele Barretta, Marko Canadija and Francesco Marotti de Sciarra, "Nonlocal mechanical behavior of layered nanobeams", Symmetry, Vol. 12, pp 717 (20 pages), 2020
R. Barretta, F. Fabbrocino, R. Luciano, F. Marotti de Sciarra & G. Ruta, "Buckling loads of nano-beams in stress-driven nonlocal elasticity", Mechanics of Advanced Materials and Structures, Vol. 27, No. 11, pp 869-875, 2020
Francesco P. Pinnola, Marzia S. Vaccano Barretta, Raffaele Barretta and Francesco Marotti de Sciarra, "Random vibrations of stress-driven nonlocal beams with external damping", Meccanica, 2020, DOI: 10.1007/s11012-020-01181-7